two poles, and thence an increasing confidence in all the other analogies conceived to exist between them.

The points at which the needle is vertical are given by means of two equations, one of the fifth and the other of the second degree, and hence altogether there are ten such points theoretically possible. How many of these may be simultaneously real the equations do not, in their literal form, seem capable of determining; but at all events they will, in all cases, be an even number, either 0, 2, 4, 6, 8, or 10. One having been determined, one other at least must exist in the actual circumstances of the terrestrial two-poled magnet. How many soever such simultaneous points there may be, they must all lie in the same plane; and hence, if the second point which must exist could be determined, then the great circle in the plane of which the axis of the magnet itself is situated would be determined; and thus another test would be afforded of the truth or error of the hypothesis itself. Mr. Davies suggests that as this plane will be symmetrical with respect to the phænomena taking place on each side of it, its position might be tentatively assigned from a series of observations of those phænomena, especially of the dip and intensity; the variation being for obvious geometrical reasons excluded.

Though the resulting formula does not, in its literal form, appear to be capable of decomposition into factors, yet from some considerations, chiefly analogical, Mr. Davies is led to hazard the conjecture that it is capable of such decomposition; but as this is uncertain, he builds no consequences upon it, but leaves those consequences which would flow from it, open till it shall be discovered whether they would be justified by the conjecture itself being proved to be correct.

A paper was also read, entitled, "On certain Peculiarities in the double Refraction, and Absorption of Light, exhibited in the Oxalate of Chromium and Potash." By Sir David Brewster, K.H., L.L.D., F.R.S.

The crystals of the oxalate of chromium and potash are, generally speaking, opake; for at thicknesses not much greater than the 25th of an inch, they are absolutely impervious to the sun's rays, and their colour, seen by reflected light, is nearly black; but when powdered, they are green; and the colour of the smaller crystals, viewed either by reflected or by transmitted daylight, is blue. One of the most remarkable of the properties of this salt is the difference of colour in the two images formed by double refraction. At a certain small thickness, the least refracted image is bright blue, and the most refracted image bright green. The blue is found by analysis with the prism to contain an admixture of green, and the green an admixture of red; and by candlelight this red predominating over the green, gives the crystal a pink hue. At greater thicknesses the blue becomes purer and fainter, and the green passes into red; and at a certain thickness the least refracted blue image disappears altogether, and the most refracted image is alone seen. At still greater thicknesses this image also disappears, and absolute opacity ensues. When the crystal is exposed to polarized light, with its axis in the plane of polarization,

the transmitted light is green; but when the axis is perpendicular to that plane, the transmitted light is blue. A solution of the salt exhibits the same general action upon light as the solid, with the exception of double refraction. This salt has also the peculiar property of exciting a specific action upon a definite red ray, situated near the extremity of the red portion of the spectrum.

February 19, 1835.

Sir JOHN RENNIE, Knt. Vice-President, in the Chair.

A paper was read, entitled, "On the probable Position of the South Magnetic Pole." By Edward Rudge, Esq., F.R.S., &c.

The recent discovery of the site of the North Magnetic Pole, which has resulted from the experiments of Capt. James Ross, suggested to the author the inquiry whether any similar indications of an approach to the South Magnetic Pole can be gathered from any observations now on record. With this view a table is given of the observations made by Tasman in 1642 and 1643, during his voyage of discovery in the Southern Ocean, extracted from his journal; from which it appears that he on one occasion noticed the continual agitation of the horizontal needle, in south latitude 42° 25′, and longitude from Paris 160°. On the presumption that the South Magnetic Pole was at that time near this spot, and that it has since been retrograding towards the East, the author conjectures that it will now be found in or about the 43rd parallel of south latitude; and to the south-east of the Island of Madagascar, a situation extremely convenient for ascertaining its exact position, which he considers as an object of great theoretical as well as practical importance.

The reading of a paper was then commenced, entitled, "An Experimental Inquiry into the Cause of the grave and acute Tones of the Human Voice." By John Bishop, Esq. Communicated by P. M. Roget, M.D., Sec. R.S.

February 26, 1835.

JOHN WILLIAM LUBBOCK, Esq., Vice-President and Treasurer, in the Chair.

The reading of a paper, entitled, "An Experimental Inquiry into the Cause of the grave and acute Tones of the Human Voice." By John Bishop, Esq. Communicated by P. M. Roget, M.D., Secretary to the Royal Society, was resumed and concluded.

The author considers all the theories hitherto proposed respecting the functions of the organs of the human voice, as not only unsatisfactory, but as being founded on erroneous views. He shows that the modulation of the tones of the voice is not the result of variations